beam scanning element 23 toward the electrophoretic chip 1 side. The dichroic mirror 25 to be employed has such a wavelength characteristic that reflects the excited light and transmits a fluorescent light from the side of the electrophoretic chip 1.

Along an optical path for the excited light reflected by the dichroic mirror 25 is provided an objective lens 27 for converging the excited light through an opening formed in the electrophoretic chamber lid 49 to a detecting region 29 (see FIG. 2 also) of the separation passage 13 of the electrophoretic chip 1.

On the side of the dichroic mirror 25 opposite to the objective lens 27 is provided a removing filter 31 for removing excited light components. Along an optical path for the fluorescent light which passed through the removing filter 31 is provided a lens 33 for focusing, for image formation, the fluorescent light to a slit 35 in which an elongated hole is formed corresponding to the detecting region 29 of the electrophoretic chip 1.

Along an optical path for the fluorescent light from an elongated hole of the slit 35 is provided a concave holographic grating (reflection-type concave grating) 37 for separating the fluorescent light and focusing, for image formation, it onto a receiving surface of a cooled CCD (Charge Coupled Device) 39.

To the cooled CCD 39 is connected an operating device (not shown) for processing a detection signal of the cooled CCD 39.

The fluorescent-light detecting device serves to detect separated specimens by detecting a fluorescent light at the detecting region 29 of the separation passage 13 of the electrophoretic chip 1. By separating the fluorescent light from the detecting region 29 by the grating 37, a plurality of fluorescent light wavelengths can be detected.

In this embodiment, the fluorescent-light detecting device is comprised of the excitation light-source laser device 19, the beam expander 21, the beam scanning element 23, the dichroic mirror 25, the objective lens 27, the removing filter 31, the lens 33, the slit 35, the grating 37, and the cooled CCD 39, in which the first optical system is made up of the dichroic mirror 25, the objective lens 27, the removing filter 31, the lens 33 and the slit 35 and the second optical system is made up of the grating 37.

The operations of the electrophoretic apparatus shall be described below with respect to FIGS. 3 and 2.

The electrophoretic chamber lid 49 is removed to put the electrophoretic chip 1 at a predetermined position on the electrophoretic-chip holding station 4 and then move the polymer-injecting port 51 to junction it to the reservoir 15a of the electrophoretic chip 1. The polymer contained in the syringe 53 is pushed out and injected through the polymer-injecting port 51 and the reservoir 15a into the separation passage 13 and the specimen-introducing passage 11 to the full.

A buffer is injected into the reservoirs 15a, 15c, and 15w and a specimen is injected into the specimen reservoir 15s, to all of which reservoirs is then arranged the electrode 55 to subsequently attach the electrophoretic chamber lid 49 to close the chamber. The Perlier-effect temperature regulation mechanism 45 and the fan 47 are operated to regulate the electrophoretic chip 1 and the interior of the electrophoretic chamber at a predetermined temperature.

The electrophoretic high-voltage power supply 17 is used to apply a predetermined voltage on each of the electrodes 55 to introduce the specimen contained in the specimen reservoir 15s into the specimen-introducing passage 11, after which the voltages applied on those electrodes 55 are switched to introduce the specimen at the intersection between the specimen-introducing passage 11 and the separation passage 13 into the separation passage 13. The specimen thus introduced in the separation passage 13 is permitted to electrophoretically migrate toward the anode reservoir 15a and then separated. The excitation light-source laser device 19 is operated to apply an excited light through the beam expander 21 and the beam scanning element 23 to the dichroic mirror 25. The excited light is reflected by the dichroic mirror 25 toward the objective lens 27, through which the excited light is applied into the detecting region 29. At the same time, the beam scanning element 23 scans the position at which the excited light is applied onto the dichroic mirror 25 so that the excited light may be scanned in a direction (see an arrow in FIG. 3) in which the separation passages 13 are arranged in the detecting region 29.

The light from the detecting region 29 is converged by the objective lens 27 to provide a collimated light, which is then sent to the dichroic mirror 25. The dichroic mirror 25 transmits the light from the objective lens 27 to the removing filter 31. The removing filter 31 removes the excited-light components of the light which has passed through the dichroic mirror 25 to pass only such a fluorescent light that has a predetermined wavelength to the lens 33. The lens 33 converges the fluorescent light from the removing filter 31 to an elongated hole in the slit 35. The fluorescent light, after passing through the elongated hole in the slit 35, is applied to the grating 37. The grating 37 separates the fluorescent light from the slit 35 to focus it, for image formation, onto the light receiving surface of the cooled CCD 39. Based on a detection signal from the cooled CCD 39, the specimens labeled in a fluorescent manner are detected.

The configuration of the fluorescent-light detecting device shown in FIG. 3 can be changed variously. In fact, any configuration is acceptable as far as the first optical system can focus, for image formation, a light from the detecting region into the slit hole and the second optical system is provided with at least a reflection-type diffraction grating to separate the light from the slit hole and focus it, for image formation, onto the detecting element. Also, the optical system including a light source, for applying an excited light, may be of any configuration; for example, the light source may be an LED (Light Emitting Diode).

Although the fluorescent-light detecting device shown in FIG. 3 uses as the second optical system only a concave holographic grating, which is a reflection-type concave grating, the second optical system of the invention is not limited to that but may be a combination of a concave mirror and a reflection-type planar grating.

Also, although the above detecting device employs such a system that uses a beam scanning element to scan an excited light in the detecting region as the optical system for applying an excited light to the detecting region, the optical system is not limited to that but may be any optical system as far as it can apply an excited light to the detecting region, such as an optical system for applying a line-shaped excited light to the detecting region or an optical system for applying